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Publication date:
2010

Document Version
Tidlig version også kaldet pre-print

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Suenson, V., & Harder, H. (2010). *The microsphere, the user and the architecture: RFID tracking in architectural spaces*. Paper præsenteret ved Architecture and Social Architecture, Brussels, Belgien.

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The microsphere, the user and the architecture

- RFID tracking in architectural spaces

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Paper for the Architecture & Social Architecture Conference, May 2010, Brussels

Abstract

This paper presents a case study of the use of new RFID technology to register different movement patterns. The RFID technology was tested for the first time in a contemporary library in Denmark placed in Hjørring in November 2009. The RFID registration shows the library as a place of polyphony of individual routes. The question asked in this paper is how the RFID registrations can show the multi functionality of a public space. Furthermore, how can architecture be seen as an active part in attracting valuable users?

The use of RFID technology to register indoor movement patterns is a new and unexplored method in indoor public spaces and therefore many theoretical discussions will arise in the application of the tracking technology. Peter Sloterdijk's conceptions about foam and organisational atmospheres will provide the theoretical framework for this paper.

In the case presented only 50% of library users borrow materials – such as books, music, journals and games - the other 50% uses the library for different reasons. The aforementioned library has challenged the perception of a library as purely a quiet space and has replaced bookshelves with social and cultural activities. The social interaction is strongly encouraged by the physical surroundings. In this way the library has become a public domain where an exchange between different social groups is possible and also actually occurs. The library offers experiences and encourages social interaction and not just the basic library functions.

The RFID devices were carried by 252 users over four days and registered where and for how long they stayed in different places. The RFID tracking covered the movement patterns of both categories of users – borrowers and non-borrowers alike.

According to Sloterdijk every social interaction takes place in a spatial setting which can be termed a micro sphere. A micro sphere emerges in the interaction between the users and architecture. Together these microspheres create what he calls a foam structure. This theory will be used in the analysis of the RFID tracking. Thus, the case study in the library in Hjørring seems as the perfect example, for illustrating the connection between users, physical surroundings and organizational atmosphere.

Introduction

Today Danish Libraries are facing a challenge to maintain their users. In a society where most information can be found on the Internet and all it requires to order and get the materials delivered privately is a search engine and a credit card, the need for a library can seem to vanish.

As a consequence many libraries has taken up the challenge and redesigned the space, so the library now can accommodate more than just the primary library functions. The library offers an alternative for a public space which is either home or work, but a frame for social and cultural interaction in a non-commercial public area (Schultz, 2009: 32). By drawing on an example from a library in Hjørring this paper wishes to discuss how the public spaces are changing which as a consequence sets out a new agenda for the architecture. New forms of interaction is seen in this development, and a new tracking method is taking into consideration for exploring this dynamic and performative environment which has come into light in the public spaces.

Libraries as performative spaces

In a Danish context many examples of Multi Purpose Centres where libraries are integrated with other public or cultural institutions can be found (see for an example the library of Ordstrup). The main thought is that the synergy from the different institutions will create more life to the centres and the different activities offered there. Behind the idea of Multi Purpose Centres is the conception of the individual as a whole person, who is no longer committed to one leisure hobby that is located and limited to one specific place, but is constantly searching for a multiple of offers which could be the cinema, an art exhibitions or public talks all located in the same building (Bøgeskov, 2004).

As the new demands for services have changed the libraries functions, they are undergoing some changes to become:

- A common public space
- A space for meeting, inspiration, concentration, learning and contemplation
- Access to the book, the Internet and other media format
- The architecture is a new attraction and landmark in the urban environment (Niegaard mfl, 2008: 11)

An example of this is the Seattle Public Library, constructed by OMA/Rem Koolhaas in 2004. The intentions have been to create a holistic environment that expands the conventional library program and make the space open for experiences only vaguely predefined in the programme. The library is divided in spatial definitions linked with different functions to formulate a unique experience and provide a sense of orientation to the users (Klingmann, 2007: 122). The aim with this arrangement of the space is for the user to register the experience and their presence in the library as a part of their own identity (Schultz, 2009: 35). Koolhaas himself defines the library as an attraction which has become an important part of the urban landscape, and a desirable social meeting place for the inhabitant in Seattle (Koolhaas, 2009: 13).

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Seattle library by OMA/Rem Koolhaas

In the abovementioned case we see an example of expanding the traditional function of a library to a social and cultural meeting place by integrating the architecture as an active player which transforms the common routine of visiting a library into an experience. It is the new user demands combined with an iconic architecture that inscribes these contemporary public libraries in the experience economy, where the performative space is in focus (Kiib, 2009; Pedersen, 2005). By means of the performative spaces the user becomes the central part for creating their own unique experience every time they visit the library as they are encouraged to interact with the flexible and changeable surroundings. Thus the space is defined by the users and the dynamic their interrelations create, and the space has to be understood as something emerging and not a container within action takes place (Blackman & Harbord, 2010: 5). All elements are embedded in these multiple and changeable places that make the space performative. For the space to be fully unfolded the space is therefore depending on the interaction between the framework, the light, colours and the meeting with other user groups *“which gives the user the possibility of experiencing the surroundings in ever-changing constellations”* (Oxvig, 2010: 208).

The way architecture has become an active part of the public space is in opposition to the architecture in what Foucault has defined as the disciplinary society. In the imprisonment Foucault finds the ideal type of constructions which is later on seen carried through in the architectural programmes of factories and almost all other public institutions build in the last century. The ideal in the constructions was in elongation of the disciplinary dispositive to concentrate activities, dividing space and organize the time (Deleuze, 1990: 212). What in other words characterizes the material space in the disciplinary society is a merging of function, space and time (Jensen, 2009: 45). This influenced the architecture which was centred inwards and the physical form was used with the main purpose for defining the space (Jensen, 2009a).

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As a contrast to the disciplinary society today's architecture needs to have space for passages where the users can meet in the movement. By this the passages is what become central and is no longer just transportation from one place to another (Jensen, 2009: 52ff). This is what McKenzies put at stake in the following quote: *"performance will be to the twentieth and twenty-first centuries what discipline was to the eighteenth and nineteenth"* (McKenzie in Pedersen, 2005: 77).

When the public space as the Library of Seattle become multifunctional it is not just a solitary example, but is reflex a change in the discourses from one practice regime to another (Foucault, 1991: 75)

As spaces emerge through the dynamics of the users and their interaction with the surroundings, it affects the idea of one overall library space. *"The viewer no longer expects to experience a representation of the world according to any pre-defined scheme and is capable of being open to various possibilities, to participate, to be creative and to modify her expectations according to the specific potential of the experience. Potential space. Many different spaces"* (Oxvig, 2010: 208).

In the quote cited above, the Danish associated professor Henrik Oxvig talks about many different spaces emerging at the same time. Spaces that is potential but not necessarily unfolded. This stresses out the performative element of the architecture, and as a result the space becomes non-linear in which the subject has to perform (Johannesen, 2007: 2). This is the case with the Library in Seattle where the space is clearly divided into zones defined by different functions, so the user can create her own experience and is it seen in the public Library of Hjørring, situated in the North of Denmark. The Library of Hjørring will create the background for the discussion in the present paper.

The library of Hjørring

The village of Hjørring has an average of 25.000 inhabitants, and is placed in the north of Jutland. The Library of Hjørring was originally situated in the city council with the 'back' turned to the main shopping street in Hjørring. In 2008 it moved to new surroundings in a new-built shopping mall, called Metropol. The ten upper floors accommodate public offices. At the lower floor a parking space is located. In the street level thirty retail shops and a supermarket dominate the area. On the first floor are both the library and a fitness center. The Head of Development Børge Søndergaard declares: *"At the Metropol all human needs and desires can be fulfilled: consumption, body and mind"* (Interview with Børge Søndergaard).

The Library is a public library covering 4.900 square meters and offers all the average activities common for a modern library: lending department for adults, a lending department for children, free use of the internet resources, study compartments, lending department for journals and music and so on. But the library also offers more than that. There is a café and computer game consoles, a lounge furnished with big sofas and a flat screen for those who are lending DVDs, in the children's area there is climb tree and bookshelves shaped as a slide and in one corner of the library some Chesterfield armchairs surrounded by olive trees make the interior for the 'old department' containing all

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the books that normally would have been in storage. Thus the library no longer only offers the possibility for lending materials; it also offers the possibility to get inspirations and experiences. These experiences are all supported by a creative and multi functional interior design that encourages the user to an active involvement and engagement with the surroundings (Lauridsen, 2008). It is the Danish art group Bosch & Fjord in collaboration with the Library of Hjørring that has transformed the library into a multi functional experience – and knowledge center. What characterizes the library is a red ribbon – a mediatory element which passes through the library, sometimes in the floor sometimes moving up from the floor turning into shelves, bookcases, exhibition furniture, seats, gates tables and bar stools, librarian service points etc. It twists and turns through and around bookcases, furniture and other equipment. At some point the red ribbon is used as a platform for introducing new materials, at some places it simply grows up in the air and becomes art (Søndergaard, 2009: 75).



Hjørring library / www.bibliotekerne.hjorring.dk

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The library in Hjørring is a perfect example of how the programme of the space is no longer defined by the physical form. Hence the form has changed from being what defines the space, to be a multifunctional form where flexibility is incorporated. Within this it becomes possible to make the space adaptable for different and cross disciplinary activities (Jensen, 2009: 53). These intentions are supported by the architecture and the interior design exemplified with the red ribbon.

After the reconditioning and upgrading of the library the amount of users has increased with almost 50 % and with an average of 1200 visitors daily. In the meantime it has shown that only half of the users go there with the main purpose to lend materials. The other half uses the library mainly as a social and public space.

Seen in this perspective it becomes interesting how the library is organized to facilitate the different user groups and how these user groups co- interact in a public space that has become a new public domain (Reijndorp & Hajer, 2001) in the city of Hjørring.

According to the German philosopher Peter Sloterdijk, all human being is related to a spatial context and this he defines by the concept of spheres (Elden & Mendieta, 2009: 5). The spheres come to present in three different levels expanding from the initial personal or intimate bubble to the wider concepts of globe and foams. Taking departure in the notion of spheres in relation to the case-study of Hjørring Library it opens up the possibility to study the user's interaction with the physical surroundings in a setting where performativity, multi functionality and different user groups are the main elements that condition the space.

Spheres in the contemporary architecture

As an analytical tool to understand this reciprocal relation between the user and the architecture Sloterdijk's sphereological philosophy seems evident, as he has managed to overcome the western tradition with dividing objective material constraints from the symbolic, human subjective ones. This tradition is rooted to the 17th century and in his philosophy Sloterdijk distinguishes himself from Heidegger's understanding of *Dasein*, which has been a main source for the division (Latour, 2008: 7). By his concept of foam it becomes possible to examine how different atmospheres are created in the library. This opens up the possibility to put through a spatial analysis which is not limited to only examine how the organization is structured spatially and architecturally, and the complexity of the organization can be fully embraced (Borch, 2009: 2). By using Sloterdijk's foam analysis for an indoor public space this paper is focusing on the internal environments at the library of Hjørring and not the external aspects of its architecture (Borch, 2008: 556).

The sphere philosophy is a way to describe the social by incorporating the importance of the spatial structures. In common with the Actor- Network- Theory the philosophy shares an agreement with Gabriel Tarde and his understanding of the social as consisting of a small amount of thin and standardized relations which Tarde links to monads (Latour, 2004: 40). These relations are both between human and non-human entities. What in the meantime dis-

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tinguishes foam theory from network theory is an emphasis on the spatial perspective, which ANT is lacking from (Borch, 2009: 6).

The first stage of a spheres is the micro level which is a temporary closed bipolar bubble in which a common subjectivity is distributed between two partners (Borch, 2008; 550). Sloterdijk elaborate the concept of being-with as taken from Heidegger philosophy of *Dasein* to imply an always being-with- another, which by its nature forms a couple. Being- with-another entail the existence of a dwelling that has been built and in which we are enclosed (Elden & Mendieta, 2009: 6). A dwelling is not to be understood as a dwelling in its physical appearance. Regarding Sloterdijk theory of spheres these dwellings or spaces shall be understood as small envelopes or shelters that give its users the resources to produce the small micro spheres (Thrift; 2009: 124). The architecture in this case becomes important as these envelopes are embedded with elements that have been carefully explicated, protected and maintained primarily by other users (Latour, 2008: 10). Even for the new born baby there is someone to take care of him and he is integrated in spaces that always exist. Thus the subject can in the theory of Sloterdijk not been seen as an individual disconnected from others and all social interaction is always taken place in a space, whether it's an outdoor or indoor space. These ideas about the social create the foundation for what Sloterdijks calls the micro spheres. With the understanding of a being always in relation to others with whom we create a micro sphere the importance of space as an inseparable part of the human existence is emphasised and the division between subject and object founded by Heidegger is transcended.

In continuation of this intimate sphere there is a scalar move from micro spherology to macro spherology in Sloterdijks philosophy and focus is now on the spatial imaginaries that have informed cultures throughout history (Elden & Mendieta, 2009: 6). At this level, Sloterdijk changes perspective from the co-subjective bubble to a more overall description of how an imagination of a mono-spherical globe has been dominating from the ancient Greeks until present (Borch, 2009: 3). This exposition is been done in a Foucauldian inspired archaeology of the psychosocial imaginary of the west (Elden & Mendieta, 2009: 7).

In the post modern age it is no longer possible to allocate one single sphere which unites and protects us (Borch, 2009: 3). The last conception is the notion of foam which arises as the idea of a common globe implodes. Instead of one single globe Sloterdijk talks about a plural-spherology where co-subjective bubbles live together simultaneously and create what he defines as foam (Elden & Mendieta, 2009: 6). The foam is characterised as:

- Loosened structures, multi chamber systems whose cells are separated by a thin membrane
- A process which tend toward stability and inclusiveness. With time each bubble will come to be shaped by the surrounding ones and its interior will stabilise itself (Morin, 2009: 67)

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The foam consist in other words of small cells that are separated by shared walls, and these walls are not to be seen as fixed and bounded but with and ongoing exchange between the cells. The physical substance of foam should here be taken seriously, as Sloterdijk sees the plural-spherology as consisting of co-isolated associations, where each chamber or cell makes up its own microsphere (Borch, 2009:). The apartment block is foam architecture par excellence, as Christian Borch claims given that: *“the multiplicity of units are stacked above and next to one another-meaning that these shapes share with unstable foams the principle of co-isolation, meaning that spatial separation by shared walls”* (Borch, 2008: 55).



VM husene by BIG architects

What I will highlight in this paper is the co- existence of cells as part of a foam structure within public performative spaces designed for different and cross-disciplinary activities occurring simultaneously. As already mentioned half of the visitors at Hjørring Library use the library as a public space detached from the libraries main functions where the other half uses it primarily for lending materials. This fact combined with the performative programming in the architecture entail that different activities with different purposes are taking place at the same time. The activities co-exist but are not necessarily related. With the concepts of Sloterdijk it is the idea of foam as a co-existence of different smaller spheres that can be seen at a contemporary library as in the case with Hjørring Library.

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It is not a new idea to relate the philosophy of Sloterdijk to organisations. Sloterdijk himself describes how organisations create atmospheres which the inhabitants shape, respond to and incorporate in their own being and becoming (Blackman & Harbord, 2010: 8). By using the concept of foam an organisation is not to be understood as one single globe, but consisting of a foam structure with many bubbles or cells (Borch, 2009: 5). In the performative space where there is potential for many different spaces emerging through the dynamics from the users the parallel to Sloterdijk seems clear as the foam structure don't provide a stable physical membrane but is open to some degree of modification or adoption (Borch, 2008: 556). Just similar to the case at the library of Hjørring were the potential spaces are developing in ever changing constellations.

What is important to outline here is that internal of these cells there is no communication. Instead Sloterdijk draws upon Gabriel Tarde's theory about imitation, where the *"one who imitates may think that he or she act spontaneously, but actually only reacts to hypnotic suggestions"* (Borch, 2009: 4). Imitation is not to be understood as blind following but is closely connected to the possibility of resistance or rearrangement (Pedersen, 2005: 89).

When imitating a social bond is being created caused the fact that the one who imitates thereby approaches the one who is imitated. And this idea about imitation Sloterdijk borrows from Tarde when he explains the social bond between the cells in the foam structure. Due to the thin membrane there is no direct exchange but only a mutual influence on the strength of the mimetic effect (Borch, 2008: 551). The imitation of Tarde undermines the strict borders between the self and other (human and non-human) and focuses instead on the relations between the cell and the transmission linked to imitation and contagion (Blackman & Harbord, 2010: 8; Borch, 2009: 6). Taken departure in the concept of imitation the role of the foam is therefore two folded: It has an osmotic membrane allowing circulation and transmission of atmospheres and it also performs a conservative function creating specific forms of sociality (Blackman & Harbord, 2010: 8).

What are transmitted from one cell to the other in the foam structure through the imitation are affective states (Borch, 2008: 556). Thus different kind of atmospheres emerges depending on how the architectural design allows for specific light, odours, climate control etc. This is why atmospheres can be understood as affective (Blackman & Harbord, 2010: 3). The affectiveness of the atmospheres cannot be reduced to individual perception but is also an affective state subject to contagious transmission i.e. it is transmitted to one cell from the others. Imitation is a technical capacity, not a thing bodies have (Blackman & Harbord, 2010: 11).

The space in the library has been created with the purpose to open up the possibilities for the co-existence of multiple spaces. This can be defined with what Sloterdijk sees as foam structure. With the optic of Sloterdijk the users' being- in the library is based on the building of spheres that protect and gives them meaning but which may also be endangered (Borch, 2008: 549). The different spaces are therefore not to be understood as fixed and bounded but always in a dynamic process, which is emerging via the imitation (Pedersen, 2005: 78). When talking about the performative space as different spaces in which variety of elements are entangled with the users each sphere created in this performative space is what creates meaning to the different user groups at the library (Reijndorp & Hajer, 2001: 117).

Working with RFID

What is interesting regarding the philosophy of Sloterdijk is how these micro spheres can be examined in a public space where performativity dominates the architectural program as in the case with the library in Hjørring. In November 2009 a survey at the library was carried out with the aim to locate different movement patterns of the users. The survey was based on a new-developed tracking system based on RFID communication. To use of RFID as a method for indoor positioning was at the beginning of the survey an un-tested method thus the aim for the survey was also to test the RFID equipments usability for tracking movement patterns and see whether the RFID technology could unfold new perspectives on the usability at the library space. This section discusses the use and work with RFID as a method for tracking.

RFID is an abbreviation of Radio Frequency Identification, and as a technology it has existed for many years, originally developed for military purposes for positioning the enemy and other military targets. Today it has become more popular in the society and is commonly used for tracking and identification of goods and persons through the communication of radio waves. Many organizations utilize the RFID system when using key cards as an access card to enter the building (RFID Journal, 2005). To register movement patterns drawing upon the RFID technology is however an innovative phenomenon with only few national and international examples (as an example see Millonig & Gartner, 2008). The RFID tracking consist of a tag and a receiver from where radio waves are send and received. The information is then sent to a database which collects all the data, which are then transformed into maps.

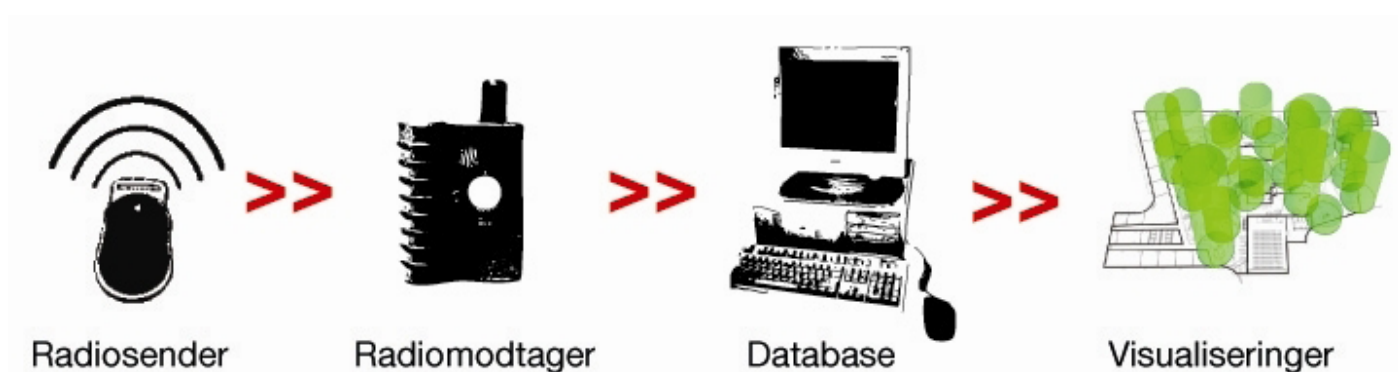


Diagram of RFID communication

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The survey in Hjørring was carried through with the aim to register the different movement patterns taken place in the library during opening hours. A need that has appeared in light of the fact that the library now functions as a public space were one half of the users visit the library for other purposes then lending materials. Through the registrations it become possible to map out where (in which areas) and for how long the users stay when visiting the library. During four days a total of 252 respondents were participating in the survey. When working with the RFID data the library was divided in five different areas, all representing different functions. The five areas are illustrated below on the overview plan.



Hjørring library / Overview plan

The method developed consists of a quantitative questionnaire supplied by RFID registrations. By combining these two kinds of data it becomes possible to attach some qualitative information to each track registered through the RFID system. The information from the questionnaire includes details about the respondents and their aim of the visit; whom they are with; their age etc. Together with data from the questionnaire the RFID registrations were subsequently transformed into maps visualizing the movement patterns by using a geographic information system (GIS).

When the users entered the public space they were asked to participate in the survey. When agreed to this, they had to fill in the questionnaire and afterwards carry an RFID tag when moving around the building. Beforehand scanners were placed at selected areas chosen beforehand by the manager at the library to register signals from the RFID tags.

In this way all activities from the users carrying an RFID tag was registered and sent to a database. When gathering the data from both the questionnaire and the RFID tracking it became possible to create a web interface where the accumulated time spent in the library could be visualized through maps as mentioned above. All the information from the survey was then related to a geographical location linked to geographical information (Brodersen, 2009a: upag.). Thus the interface functions as a computer based systems of presentation of geographically related data, also known as GIS (Skov-Petersen, 2002: 3). The definition is though more broad then the traditional semantic meaning of the word GIS defined by geographers (Goodchild in Schuurman, 2009: 573).

The process of collecting data using RFID combined with the questionnaire with the purpose to create geo information based maps; some similarities with crowd sourcing can be drawn as it generates data from a large group of users and the data become accessible and shareable as a web based service (Hudson-Smith, 2008: 4). This transforms the respondents to human sensors as they by their movements provide information about the use of the indoor space. And as most of the users at the library are a local in the environment the information becomes much richer compared to an inert sensor (Goodchild in Schuurman, 2009: 575).

The information in the web interface can be divided in different categories such as age, gender and day of the survey; week day vs. weekend for instance. The web interface therefore becomes interactive in the way that the users of the interface can vary the categories depending on the information they're seeking. On the other hand, it is rather passive as the user groups have no access to change the data (Hudson-Smith, 2008: 7). As a consequence the geo information maps become pure representations of the movement patterns in the performative space. It is often seen that more attention is paid to the method rather than the content when working with tracking and GIS– in this context a common question would be *how has the collection of data been carried through?* (Brodersen, 2009a: upag.). What becomes interesting to discuss taken departure in the philosophy of Sloterdijk is *how* the maps produced from the survey can tell us something about the use of the performative space where small micro spheres emerges and disappear reliant on the dynamics from the users?

When asking this kind of question the function of the maps as an expression of different micro spheres, the maps are transformed to purely represent a phenomenon (Brodersen, 2009a; Brodersen, 2009b: upag.) – in this case different micro spheres in the performative space. From here meaning has to be found.

Visualization of micro spheres

When combining data from the questionnaire with the RFID tracking four kinds of movement patterns distinct from each other emerged. These patterns are all related to certain places in the library and are developed in the combination of elements all entangled such as the light, the furniture, the other users and artifacts, whereby they all three maps become representations of different micro spheres.

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Map 1: Thusday men all ages



Map 2: Monday women all ages



Map 3: Saturday men and women all ages

All three maps show that the main activity during a day is taking place in the upper right corner where the main entrance is located; area 1 from the overview plan. All activities regarding lending, handing in or renewing materials are carried through in this area, why these columns doesn't seem to cause much attention. A micro sphere developed from the activities from this area seems to be quite stabilized during indifferent to whether it's on a week day or during the weekend.



Hjørring library / Main entrance

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What is of interest here is where the other one half of the respondents are located – presumably those who mainly use the library as a public space, rather than lending materials. The three maps show how both men and women use the library differently during the week (map 1 & 2), while map 3 shows how both user groups stay in the area called the children's zone, area 4 during Saturday. From the questionnaire survey it became clear that throughout the week most of the respondents came alone or with friends, while the major part were in a companionship with their family in the weekend. In this perspective the children's area becomes highly desired among the users.

Map 1 illustrating movement patterns from the male respondents during a weekday a concentration of activities in the 'old department' area 3 is shown. This area is containing omitted books and journals which normally would be in storage but is now a part of the library decoration creating an atmosphere of an old library. The book shelves in this corner of the library are kept in brown colors and the zone is centered towards four big Chesterfield armchairs all in brown. Sitting in the armchairs allow the user for looking up the sky and watch the clouds passing by through a big sky light in the ceiling. The chairs are surrounded by olive trees which contribute to the calm atmosphere in this zone. What is shown on map 1 is an example of a micro sphere that has emerged based on the imitation from the male respondents all gathering in this area. Put differently the combination of the elements in the zone affects the users and the process of imitation can be described as the micro sphere is emerging.



Hjørring library / Old department

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Map 2 shows another narrative concerning the women's movement patterns. As earlier explained, there is an immense activity registered in the entrance area. This is the case for almost fifty percent of the female respondents. As a contrast to the male respondents the female registrations are spread all over the library with no clear point of gathering. Does the map show that there is no particular imitation taken place amongst the female respondents? And does this lack of imitation prevent the emergence of a certain micro sphere? If this is the case there is no particular design thorough enough to create a performative space mostly affective for the female users. Maybe this is what the map illustrates?



Hjørring library / Adult lending department

Map 3 shows the collected movement patterns men and female all together. As opposed to the two maps shown above this map illustrate the data collected on a Saturday. Again a different pattern stands forth. This day most of the activities are gathered in area 4, which contain the children books. The area offers all different kinds of possibilities such as a big climbing tree, a video recorder, a 'Very Important Parents' area, big blue madras with the purpose for playing and relaxation, a stage, cloth for dressing up and of course lower book shelves representing children books. In this zone there are not any elements centering the activities as in the case with the 'old library'. All different kind of activities is taken place simultaneously, and the conception of a performative space seems to be fully unfolded in this area, obviously in a minor scalar compared with the library as a whole. What draws the attention is that both men and women are together in this area where different kinds of small micro spheres seem to emerge. The imitation is in this case no longer limited to the same gender.

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Hjørring library / children department

As in the case with map 2, there is no single activity making the opportunity for one sphere to emerge as seen in the 'old department' area. How smaller micro spheres are embedded in this bigger sphere is not possible to register. The RFID tracking therefore seems useful to give an idea of where the most activity is taking place during the day. On Saturday it is centered in the children's area, during weekdays women are spread more or less evenly all over the library. To give a more enriched registration of the emerging micro spheres, would require another and much more detailed RFID setup, which was not the case with the Library of Hjørring survey.

The web interface provides much different kind of maps, with the possibility to change the parameters for the data shown. The three maps presented are only meant as an example of how to work with RFID tracking in performative spaces, and to illustrate how the sphereology of Peter Sloterdijk can provide with analytical tools to capture the complexity of the interrelation between the users and the architecture.

Concluding remarks

As mentioned this paper was aiming to discuss how RFID as a method can contribute with new perspectives on the use of the performative spaces. What was presented here was a first rough example of how an analysis can be carried through drawing on the conception of spheres, taken from Sloterdijk. The analysis presented is therefore not to be seen as completed, but merely as a first step into the world of RFID registrations and performative spaces. More detailed and elaborated analysis is still needed and would clarify both the advantages and disadvantages with the method even further.

With inspiration from Hans Skov –Petersen's schematic presentation of the distinction between different types of actors of communication (2002) the RFID maps can be discussed on either an abstract or concrete level. At the abstract level the meaning is related to the micro spheres uprising in the performative space. At the concrete level meaning is related to the actual registrations of the different movement patterns taking place in the library. This emphasizes the point that maps used as representations are always subject to interpretation (Goodchild in Schuurman, 2009: 574). And how information is expounded is depending on the interpreter. At the concrete level the user groups would typically be practitioners such as architects, developers, and planners. At the abstract level the user groups could be expected to be the academic research field.

From here hopefully a fruitful discussion on how to work with RFID registration when examine the use of public spaces can initiate.

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